

Amendment to the Claims

This listing of claims will replace all prior versions and listings of the claims in the application.

Listing of Claims

1. (Currently Amended) A method of immobilizing nitrate ions or nitrite ions in aqueous waste comprising the steps of :

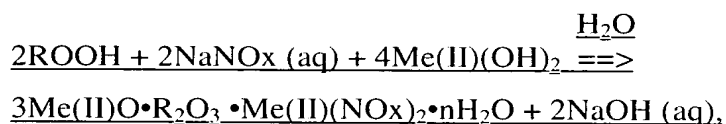
(a) mixing the aqueous waste with a compound selected from the group consisting of Me(II)O and Me(II)(OH)_2 and a compound selected from the group consisting of 1) a compound having the formula $\text{Me(II)O} \cdot \text{R}_2\text{O}_3$, and 2) a compound having the formula R_2O_3 , R(OH)_3 or ROOH , to provide an aqueous waste mixture,

where Me(II) is a cation selected from the group consisting of Ca, Ba, Sr, Mn, Zn and combinations thereof, and where

R is selected from the group consisting of Al, Fe, Cr and combinations thereof; and

(b) allowing the aqueous waste mixture to form a solid with a crystalline structure which incorporates the nitrate ions or nitrite ions from the aqueous waste within the crystalline structure of the solid, wherein the following reaction

immobilizes the nitrate ions or nitrite ions in the aqueous waste:



where x is 2 or 3 and n is at least 10.

2. (Currently Amended) ~~The method of Claim 1,~~ A method of immobilizing nitrate ions or nitrite ions in aqueous waste comprising the steps of:

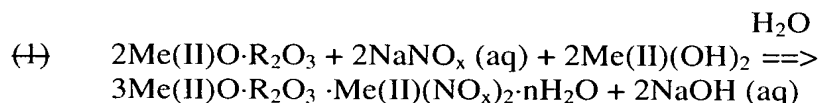
(a) mixing the aqueous waste with a compound selected from the group consisting of Me(II)O and Me(II)(OH)_2 and a compound selected from the group consisting of 1) a compound having the formula $\text{Me(II)O} \cdot \text{R}_2\text{O}_3$, and 2) a compound having the formula R_2O_3 , R(OH)_3 or ROOH , to provide an aqueous waste mixture,

where Me(II) is a cation selected from the group consisting of Ca, Ba, Sr, Mn, Zn and combinations thereof, and where

R is selected from the group consisting of Al, Fe, Cr and combinations thereof; and

(b) allowing the aqueous waste mixture to form a solid with a crystalline structure which incorporates the nitrate ions or nitrite ions from the aqueous waste within the crystalline structure of the solid,

wherein the following reaction immobilizes the nitrate ions or nitrite ions in the aqueous waste:



where x is 2 or 3 and n is at least 10.

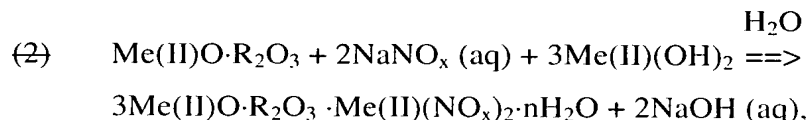
3. ~~(Currently Amended) The method of Claim 1,~~ A method of immobilizing nitrate ions or nitrite ions in aqueous waste comprising the steps of:

(a) mixing the aqueous waste with a compound selected from the group consisting of Me(II)O and Me(II)(OH)₂ and a compound selected from the group consisting of 1) a compound having the formula Me(II)O·R₂O₃, and 2) a compound having the formula R₂O₃, R(OH)₃ or ROOH, to provide an aqueous waste mixture, where Me(II) is a cation selected from the group consisting of Ca, Ba, Sr, Mn, Zn and combinations thereof, and where

R is selected from the group consisting of Al, Fe, Cr and combinations thereof; and

(b) allowing the aqueous waste mixture to form a solid with a crystalline structure which incorporates the nitrate ions or nitrite ions from the aqueous waste within the crystalline structure of the solid,

wherein the following reaction immobilizes the nitrate ions or nitrite ions in the aqueous waste:



where x is 2 or 3 and n is at least 10.

4. ~~(Currently Amended) The method of Claim 1,~~ A method of immobilizing nitrate ions or nitrite ions in aqueous waste comprising the steps of:

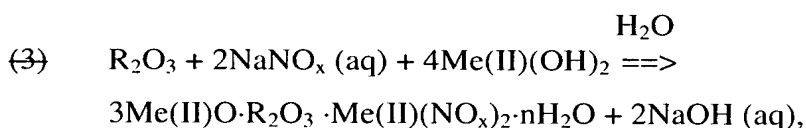
(a) mixing the aqueous waste with a compound selected from the group consisting of Me(II)O and Me(II)(OH)₂ and a compound selected from the group consisting of 1) a compound having the formula Me(II)O·R₂O₃, and 2) a compound having the formula R₂O₃, R(OH)₃ or ROOH, to provide an aqueous waste mixture,

where Me(II) is a cation selected from the group consisting of Ca, Ba, Sr, Mn, Zn and combinations thereof, and where

R is selected from the group consisting of Al, Fe, Cr and combinations thereof; and

(b) allowing the aqueous waste mixture to form a solid with a crystalline structure which incorporates the nitrate ions or nitrite ions from the aqueous waste within the crystalline structure of the solid,

wherein the following reaction immobilizes the nitrate ions or nitrite ions in the aqueous waste:



where x is 2 or 3 and n is at least 10.

5. ~~(Currently Amended) The method of Claim 1,~~ A method of immobilizing nitrate ions or nitrite ions in aqueous waste comprising the steps of:

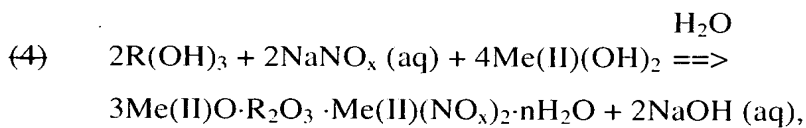
(a) mixing the aqueous waste with a compound selected from the group consisting of Me(II)O and Me(II)(OH)₂ and a compound selected from the group consisting of 1) a compound having the formula Me(II)O·R₂O₃, and 2) a compound having the formula R₂O₃, R(OH)₃ or ROOH, to provide an aqueous waste mixture,

where Me(II) is a cation selected from the group consisting of Ca, Ba, Sr, Mn, Zn and combinations thereof, and where

R is selected from the group consisting of Al, Fe, Cr and combinations thereof; and

(b) allowing the aqueous waste mixture to form a solid with a crystalline structure which incorporates the nitrate ions or nitrite ions from the aqueous waste within the crystalline structure of the solid,

wherein the following reaction immobilizes the nitrate ions or nitrite ions in the aqueous waste:



where x is 2 or 3 and n is at least 10.

6. (Canceled)

7. (Currently amended) The method of any one of Claims 1 through ~~65~~, wherein Me(II) is Ca.
8. (Currently amended) The method of any one of Claims 1 through ~~65~~, wherein R is Al.
9. (Currently amended) The method of any one of Claims 1 through ~~65~~, wherein Me(II) is Sr.
10. (Currently amended) The method of any one of Claims 1 through ~~65~~, wherein R is Fe.
11. (Currently amended) The method of any one of Claims 1 through ~~65~~, wherein Me(II) is Ca and R is Al.
12. (Currently amended) The method of any one of Claims 1 through ~~65~~, wherein Me(II) is Ca and R is Fe.
13. (Canceled)
14. (Currently amended) The method of ~~Claim 4~~Claims 1 through 5, wherein the solidified waste is formed in an exothermic reaction and provides hydrated compounds, and is characterized as having a crystalline structure which incorporates the nitrate ions or nitrite ions from the aqueous waste within the crystalline structure of the solid.
15. (Original) The method of any one of Claims 1 through ~~65~~, wherein Me(II)(OH)₂ is replaced by Me(II)O.
16. (Currently Amended) The method of any one of Claims 1 through ~~65~~, wherein the aqueous waste is low level nuclear waste, wherein formation of droplets of solution on the exterior surface of the solid of step (b) is resisted.